Session 2: Effective paths towards the SDGs: STI for ending poverty and hunger, enhancing human well-being and building resilience (15:00-16:00)

Babatunde Ajayi on behalf of Federal University of Technology Akure

Nature Based Construction Panels from Agricultural Residues: Panacea to Poverty, Hunger, and Environmental Degradation.

Poverty, hunger, environmental degradation and climate change can be mitigated with the production of environmentally friendly value added panel products from agricultural wastes and weeds. These products can stand as alternative to wood products demands for construction industries; and can increase farmers' income, prosperity, and alleviate poverty.

These products are hybrids of organic, inorganic (cement) and plastic (virgin HDPE and recycled LDPE) reinforced with assorted wood wastes, weeds and agricultural by-products, using adaptable and innovative manufacturing techniques. The products are versatile and can be made from a conventional and non-conventional raw materials sourced locally. They can be used for low cost and core housing delivery, furniture, electronics and automobile components etc. These phenomenon can enhance reduction of pressure on existing forest resources biodiversity and increase the income of the community inhabitants, thereby promoting food security and quality environment conducive for good health and well-being of fauna, flora and soil productivity.

Justification

Development and implementation of this innovative product will alleviate poverty through the sales of agricultural residues, postharvest wastes and weeds for panel production. Furthermore, environmental degradation and pollution arising from burning and other conventional means of waste disposal will be prevented. Adoption of this concept will create job opportunities for the rural inhabitants; produce affordable value added products; conserve forest biodiversity; curb siltation of water ways; promote sustainable use of natural resources; restore economic mother trees for seed production; protect edaphic resources against caking of the soil; and conserve bio-diversity and mitigate climate change. These products are resistant to bending force, dimensional movement and biodeteriorating agents.

Production Process

Raw materials are processed into flakes/particles and screened to remove all forms of impurities. In case of inorganic bonded boards, the flakes/particles are treated in hot water to remove extraneous materials capable of inhibiting the setting and curing of the binder. The particles, binder and additive are mixed together, formed inside a mould and cold-pressed.

The production of plastic bonded board involved the mixture of the screened particles with recycled plastic and extrusion of the mixture to generate pellets. The pellets are laid inside a mould placed on a caul plate, pre-pressed and thereafter hot-pressed.

Analysis of the data obtained on each product will determine the area of applications

Why the Use of Agricultural Wastes?

The use of Agricultural residues will:

- increase the income of indigenous people and alleviate poverty;
- Increase raw materials supplies for construction industries;
- Create job opportunities for low and high income earners;
- Increase food production;
- Reduce pressure on forest resources biodiversity;
- Develop innovative science and technology in engineering, architectural designs and building mega structures;
- Produce innovations in products manufacturing, processing and utilization; and
- Mitigate climate change.

Conclusion

Value-added panels can be manufactured from lignocellulose waste materials. The boards are dimensionally stable with better strength properties designed to meet the specification for interior and exterior use worldwide. Investment in this innovation could promote poverty eradication, improve socioeconomic standards of people, mitigate climate change, and revolutionize orientation in design, technology and industrialization through sourcing, processing, new products development and utilization of raw materials and final products.

Promote, support, and collaborate in project implementation dovetailing into a prosperous world in perpetuity and sustainably.

Recommendations

- Genuine private investors and international financial institutions should support the academia/researchers to explore and provide concerted data of all cultivated agriculture produce and subject to investigative research and development.
- International agencies, organizations and private investors should promote and sustain the use of these residues to enhance food and livelihoods; alleviate poverty, revolutionized Industrial development, innovation of highly functional and locally adaptable technology in panel production.
- National and international institutions should provide fund for the establishment of the industry; which should be run on public-private partnership basis so as to serve as public sector partner for future private sector driven mechanism.

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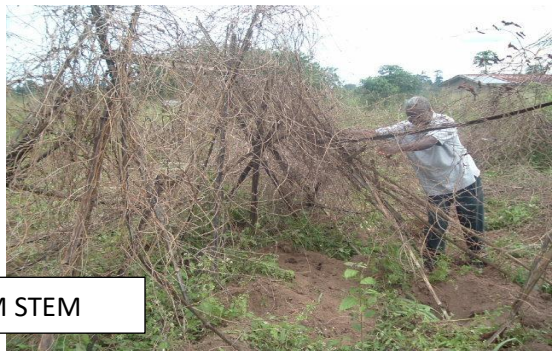
http://fwt.futa.edu.ng/home/profile/883

https://www.inclusivebusiness.net/ib-voices/call-producing-construction-materials-agricultural-wastes

SAMPLES OF RAW MATERIALS



YAM STEM

Groundnut Shell

SAMPLE OF THE BINDER

PLASTIC WASTES

BOARD FOR CEILINGS/PANELING

CEMENT BONDED BOARD FOR WALL PARTITIONING

Palm Fiber Plastic composite